Regional San Monetized Benefits A.3
Monetization Methods Non-Public Benefits
Section BCRM

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Summary of Results

Section ID	Valued Benefit	Valuation Method	Net Present Value (2015 USD) (RW supply not significantly dependent on climate conditions for this analysis)	Value used in Total NPV?
Non-Public Benefits				
1A	Agricultural Groundwater Supply Reliability	Avoided Cost	-	n/a
		Alternative Cost	$26,944,622	Y
		WTP	-	n/a
1B	Municipal Water Supply Reliability	Avoided Cost	-	n/a
		Alternative Cost	$97,284,269	Y
		WTP	-	n/a
2	Reduced Cost of Fertilizer	Avoided Cost	$898,154	Y
		Alternative Cost	-	n/a
		WTP	-	n/a
3	Reduced Cost of Discharge	Avoided Cost	$2,327,201	Y
		Alternative Cost	-	n/a
		WTP	-	n/a
Total Net Present Value (Avoided Cost + Minimum of Alternative Cost & WTP)			**$127,454,246**	Y

1. Non-Public Benefit: Water Supply Reliability

1A. Alternative Cost for Agricultural Groundwater Supply

Benefit Type

- Non-Public

Benefit Category

- Reliability

Physical Benefit

- Increased Reliability of Access to Recycled Water, in addition to groundwater.

Physical Benefit (detail)

As a result of Regional San providing the recycled water to the landowners/farmers in the project area, the agricultural water users will be able to rely upon the recycled water supply in all year types, while being expected to maintain their existing groundwater wells so that they will be able to pump groundwater in the driest months of the growing season (July and August), thus meeting 1/3 of their monthly peak demand with their wells and 2/3 with recycled water from Regional San. This reliable supply scenario would be expected in all year types, but with potential operational changes in critically dry years when Regional San may need to implement its mitigation requirement, termed HYD-4, to address cold water pool issues (RMC, 2017a; see Final EIR Appendix C for MMRP and full description of HYD-4). In these year types, which are expected to occur approximately 5% of the time under 2030 climate conditions and 12% of the time under 2070 climate conditions, modeling has shown that effects on ecosystem benefits can be lessened to de minimus levels through supplying 50% of the demand in the growing season with recycled water and shifting the balance of the annual recycled water supply of 50,000 AFY to non-growing season months for wintertime irrigation/passive recharge (RMC, 2017b). The benefit is estimated, based upon the 50% cutback in growing season deliveries roughly 1 in 10 years, at 9.5 years out of 10 (95% of the water delivered over time in the growing season).

Monetization Method

Alternative Cost. No other avoided cost or willingness to pay methodology was available which would better characterize the benefits to the Agricultural Users than this Alternative Cost methodology.

Discount Rate

3.5%

Planning Horizon

84 years

Monetization Method (detail)

To estimate the alternative cost of the increased reliability of access to water using recycled water, we use the value of recycled water given in Section 5-4 of the Sacramento Regional County Sanitation District South County Recycled Water Feasibility Study (RMC, 2014). This value reflects the same value of water that would be incurred by Agricultural users if they continued to pump 100% groundwater to meet their water demands in the growing season, assuming pumping costs remain steady. In 2015 dollars, this value equates to $32/AF.

Monetization Results

The Excel Worksheet "3.3 Reliability CvB" in Attachment A.10, Benefit Calculation, Monetization, and Resiliency Tab, shows the cost of recycled water delivered to Agricultural users. Alternative costs are expressed in 2015 dollars, unless otherwise labeled. The alternative cost was applied to the volume delivered in each year during the growing season (32,500 AFY). A 3.5% discount rate is used to estimate the present value of this alternative for future years, until the termination of the project.

Net Present Value of Alternative

- Net Present Value ($ 2015): $26,944,622

1B. Alternative Cost for Municipal Water Supply

Benefit Type

Non-Public

Benefit Category

Reliability

Physical Benefit

Increased Reliability of Access to Banked Groundwater

Physical Benefit (detail)

As a result of Regional San providing the recycled water to the South County Agricultural project area, and increasing the groundwater levels throughout the project area and throughout the Central Groundwater Basin, Regional San will be working with the Sacramento County Groundwater Authority (SCGA) and the other stakeholders in the region to develop a groundwater bank. This bank will be managed in a manner to develop and maintain claimed ecosystem benefits described in Sections 1 through 6 of the companion document for Monetized Public Benefits (attached with this Non-Public Benefit summary), and to maintain the reliability of the groundwater basin for the Agricultural Users as described in Agricultural Groundwater Supply section above. Banking extractions will be managed to only allow withdrawals in approximately 3 dry years per decade, proportional to in-lieu recharge at roughly a 30 to 100 ratio, and no with withdrawals of unbanked water so groundwater levels

would not be expected to be negatively impacted, even if there are multiple consecutive dry years. When the banking partners use banked groundwater, they are expected to pay for it in relation to the benefits it provides, and leave an equivalent amount of surface water in the River system.

Monetization Method

Alternative Cost. No other avoided cost or willingness to pay methodology was available which would better characterize the benefits to municipal water suppliers than this alternative cost method which was consistent with monetization methods used by local municipal suppliers in the Central Groundwater Basin in previous grant application processes with California Department of Water Resources (Proposition 84) and California Water Resources Control Board (Proposition 50).

Discount Rate

3.5%

Planning Horizon

84 years

Monetization Method (detail)

To estimate the alternative cost of the increased reliability of access to banked groundwater through recharge of recycled water, we used the value of alternative water supply given in Section 5-5 of the Sacramento Regional County Sanitation District South County Recycled Water Feasibility Study (RMC, 2014). This value reflects the sum of the capital ($273/AF) and operations and maintenance ($70/AF) to produce the same supply of water in the vicinity of the Central Groundwater Basin. In 2015 dollars, that value would be $370/AF. In actuality, the value of that water may be even higher in drought years, but so would the surface water that is left in the River, so this alternative cost "value" is conservative but supported.

Monetization Results

The Excel Worksheet "3.3 Reliability CvB" in Attachment A.10 shows the cost of recycled water delivered to Municipal Interests. Alternative costs are expressed in 2015 dollars, unless otherwise labeled. The alternative cost was applied to the volume delivered in three out of ten years. A 3.5% discount rate is used to estimate the present value of this alternative for future years, until the termination of the project.

Net Present Value of Alternative

- Net Present Value ($ 2015): $97,284,269

2. Non-Public Benefit: Reduced Cost of Fertilizer

Benefit Type
Non-Public

Benefit Category
Reduced Cost

Physical Benefit
Reduced Cost of purchasing Fertilizer to use on Agricultural land in lieu of receiving the fertilizer value in the recycled water as part of the project

Physical Benefit (detail)
Although the recycled water provided by Regional San as a result of the construction of the Echo Water Project will receive tertiary treatment, including nitrogen removal, there will be some beneficial nutrients (nitrogen, phosphorus and potassium) in the recycled water. These nutrients will have some fertilizer value to the farmers, allowing them to reduce fertilizer use incrementally.

Monetization Method
Avoided Cost. This is a relatively small benefit. No other method for monetizing this benefit was available because the benefit is quantifiable and can be denominated in direct savings of a purchased commodity by the agricultural user, and no real substitutes are available.

Discount Rate
3.5%

Planning Horizon
84 years

Monetization Method (detail)
To calculate the value of fertilizer, we used the value of $1/AF from the Regional San Feasibility Study based upon the amount of nitrogen available per gallon in the recycled water (RMC, 2014). We converted that 2012 value to 2015 dollars, resulting in $1.08/AF. We multiplied the value of the fertilizer by the annual recycled water provided in the Program area during the growing season.

Monetization Results
The Excel Worksheet "3.5 Reduced Fertilizer CvB" in Attachment A.10 shows the results of our calculation. $1.08/AF times the annual water use during the growing season of 32,500 AFY in 9 of 10 years and 16,250 in 1 of 10 years, results in $33,286/year.

Net Present Value of Alternative

- Net Present Value ($ 2015): $898,154

3. Non-public Benefit: Reduced Cost of Discharge

Benefit Type
Non-Public

Benefit Category
Avoided Cost

Physical Benefit
Reduced Cost of pumping discharged wastewater to the Sacramento River in lieu of providing to Agricultural land as part of the project.

Physical Benefit (detail)
Regional San currently discharges the vast majority of its treated wastewater (what it does not recycle in the Plant and in the Phase 1 Laguna Area near the Plant) to the Sacramento River. In order to discharge, Regional San must pump the effluent to the Sacramento River near Freeport. For every gallon recycled, a gallon of pumping to the Sacramento is avoided and that results in saved electrical power. Pumping costs for recycled water distribution are included in capital costs of the project, so any avoided costs of pumping to the river provide a benefit to Regional San.

Monetization Method
Avoided Cost. There is no other method which is so straightforward for this application than the avoided cost approach.

Discount Rate
3.5%

Planning Horizon
84 years

Monetization Method (detail)
Because Regional San does not need to pump the 50,000 AFY of recycled water to the River, it saves approximately $80,000/year in pumping electrical costs in 2012 dollars according to the Facilities Plan (RMC, 2014). Adjusting those dollars to 2015, the avoided cost savings is $86,246/year.

Monetization Results
The Excel Worksheet "3.6 Reduced Discharge CvB" in the Excel file for Attachment A.10 shows the results of the monetization. The annual power costs avoided are $86,246/year.

Net Present Value of Alternative

- Net Present Value ($ 2015): $2,327,201.

References

RMC Water and Environment. 2014. *Sacramento Regional County Sanitation District South County Recycled Water Feasibility Study.* May. https://www.regionalsan.com/general-information/south-county-ag-feasibility-study

RMC Water and Environment. 2017a. *Final Sacramento Regional County Sanitation District's South Sacramento County Agriculture and Habitat Lands Recycled Water Program Draft Environmental Impact Report (SCH#: 2015022067).* January. https://www.regionalsan.com/post/south-county-ag-final-environmental-impact-report

RMC Water and Environment. 2017b. *Integrated Groundwater and Surface Water Modeling Results Technical Memorandum*. August. GRANTS Benefit Calculation, Monetization, and Resiliency tab, A.1 Project Condition. File; "Regional San_SacIWRMModelingTM_A.1 Project Conditions_SecBCMR.pdf"